

Coastal Marine Demonstration of Forecast Information to Mariners for the U.S. East Coast

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LONG-TERM GOAL

Our long-term goal is to estimate and predict the coastal and estuarine environment. Relevant atmospheric variables include wind, temperature, humidity, precipitation, and visibility. Oceanic variables of interest include waves, currents, temperature, salinity, and water level.

OBJECTIVES

This collaboration will (1) demonstrate our current capability to estimate and predict the marine environment of Chesapeake Bay and the coastal ocean of the Mid-Atlantic Bight (Figure 1), (2) develop and apply new techniques for delivering marine information to users, and (3) continue to improve our ability to estimate the marine environment. Chesapeake Bay and the neighboring coastal ocean are heavily used for military, commercial, and recreational purposes. Marine environmental information is needed for safe and efficient operation in these waters. This is also a region for which there have been efforts to develop estimation and prediction capabilities. The Coastal Ocean Forecast System (COFS) (Aikman et al., 1996) has been applied to the East Coast of the United States for several years. The Chesapeake Area Forecast Experiment (CAFE) (Bosley and Hess, 1997) has been developed and evaluated as well. Other tools are now available including the Local Analysis and Prediction System (LAPS) (Albers, 1996) and the mesoscale ETA model (Black, 1994). At the same time, regional real-time observational systems are expanding and providing the data necessary for mesoscale forecasts.

APPROACH

We will conduct two demonstration periods. The first is scheduled for June-July, 1999. During these periods, estimates and forecasts will be delivered to participating users. Developing new methods for the delivery of these products is a significant component of this collaboration. Users need information in a form that is easily transmitted and effectively communicated. While new communications

channels are attractive, most users will want information delivered through existing channels. The volume of information emanating from analysis and forecast systems may be overwhelming. Delivered information must be customized and synthesized. Examples of this type of customization are available at the Intellicast web site (<http://www.intellicast.com/>) which is a product of Weather Services International. Users will be asked to assess the product during and after the demonstration period.

Our analysis and forecast suite includes COFS, LAPS, CAFE, and meso-ETA. A significant component of this project is the connecting of data streams between these systems. The GLERL (Schwab, 1984) and SWAN (Holthuijsen et al., 1993) models are being applied to estimate the surface wave field. The output of these models and analyses will be delivered to the users as described above.

WORK COMPLETED

We are just beginning this project. Initial progress has been made on implementation of the LAPS, and we are making the connections between our models. Assimilation methodology continues to improve as partners collaborate.

RESULTS

As this project began in August 1998, there are no results to report at this time.

IMPACT/APPLICATION

We anticipate that users will find some of the products of substantial value for improving safety and efficiency in the marine environment. We also expect that the lessons learned in constructing this analysis and forecast system will be of significant value when constructing similar systems for other regions. As models mature and are combined with biological models, there may be additional applications beyond the scope of this project. Specifically, there are opportunities for important contributions to water quality and fisheries/recruitment models.

TRANSITIONS

Our final report will include suggestions for transition of the system to operational status.

RELATED PROJECTS

Each PI is conducting a research program that is supporting and benefiting from participation in this project.

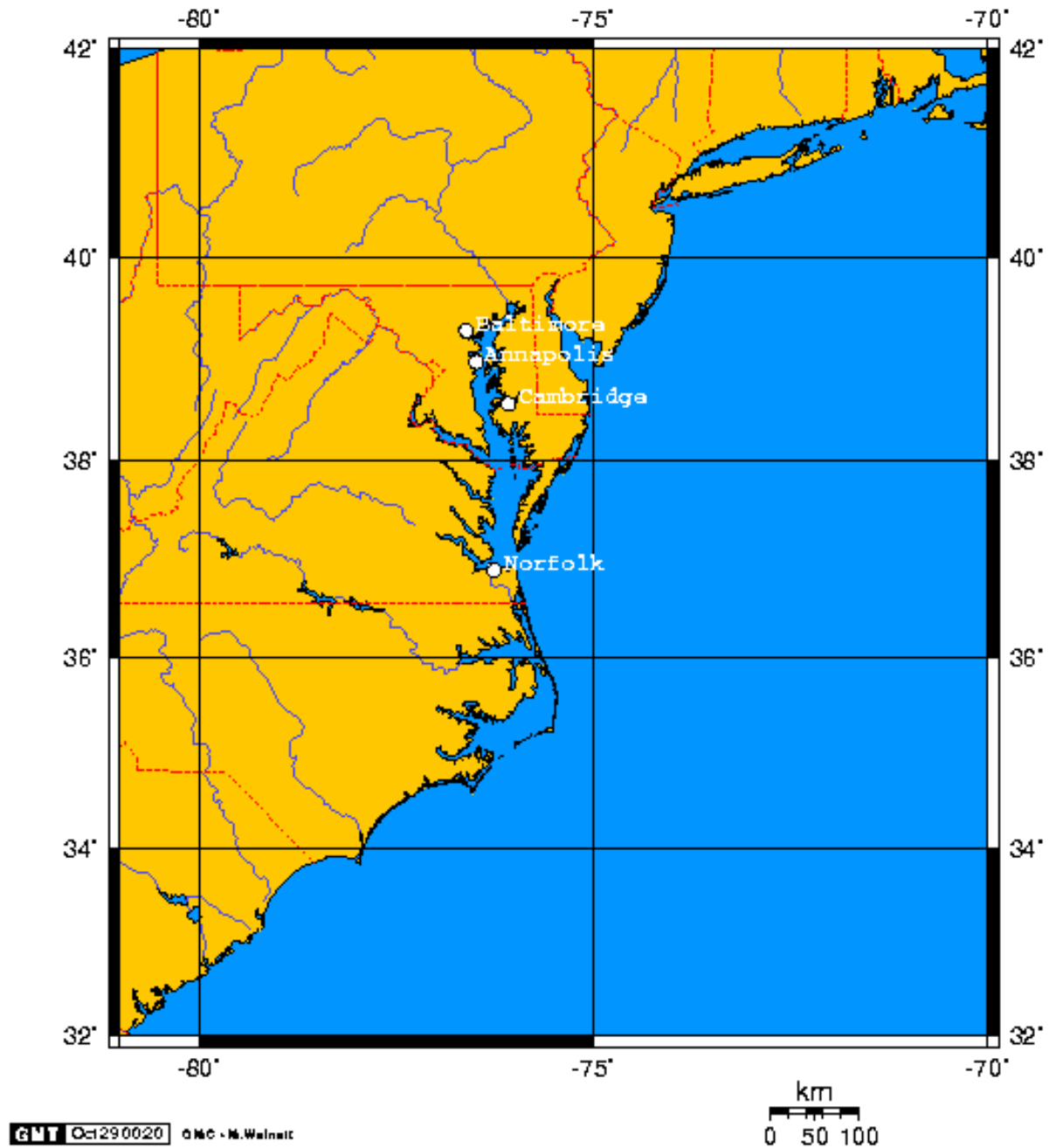


Figure 1. The region of interest for the Coastal Marine Demonstration Project extends from 32N to 42N, from the coast to 70 W. Fine resolution atmospheric and estuarine models will be run for the Chesapeake Bay region.

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PUBLICATIONS

As this project began in August 1998, there are no publications at this time.